

## Scope of Services

Comprehensive Routing Study for the Naugatuck River Greenway Trail  
From Thomaston to Torrington, Connecticut

### Project Understanding

The Naugatuck River Greenway (NRG) Trail is a planned multi-use trail along the Naugatuck River, extending from the City of Torrington to Derby. The NRG, once completed, will pass through eleven communities and extend about 44 miles. The corridor has been officially designated as a greenway by the CT Greenways Council and the CT Department of Energy and Environmental Protection (DEEP). The entire greenway trail is identified as a trail of statewide significance in the Connecticut Recreational Trails Plan, and it was designated as one of 101 America's Great Outdoors projects in 2011 by the U.S. Department of Interior.

The goal of the NRG Torrington to Thomaston routing study is to establish a firm agreed upon route for the NRG trail from Bogue Road in Torrington south to the trail being built in Thomaston on Old Waterbury Road. The Naugatuck Valley Council of Governments (NVCOG) has received a Responsible Growth and Transit Oriented Development (TOD) Grant from the Connecticut Office of Policy and Management (OPM) to conduct this study in partnership with the Northwest Hills Council of Governments (NHCOG), and the municipalities of Thomaston, Harwinton, Litchfield and Torrington.

The study area can be broken down into two sections: Section 1 north of Thomaston Dam and Section 2 South of Thomaston Dam. For section 1, several potential routes have been identified on a very preliminary basis, and a comprehensive routing study will be required. For section 2, south of Thomaston Dam, a routing study was conducted by ALTA Planning & Design in 2010. Additional potential routes have been identified since completion of that study. For those sections, routing will need to be revisited, and construction estimates revised.

BSC Group – Connecticut, Inc. (BSC) will undertake the services described below:

### Task 1 - Catalogue Existing Conditions and Inventory all Potential Routes.

This study is anticipated to be a collaborative effort that includes a wide range of representative stakeholders to create a Project Committee. The Project Committee will oversee and guide progress on the Routing Study and will include members from the NRG Steering Committee, NVCOG, NHCOG, Torrington, Harwinton, Litchfield, Thomaston, the US Army Corp of Engineers (USACE), and BSC and VN team (hereinafter "BSC").

Early in the process, BSC will meet with the Project Committee and stakeholders to discuss the project, collect background information, and discuss a schedule, including identification of public meeting preferences. Trail information collected from the kick off meeting as well as during the initial desktop assessment will be analyzed in the field to catalogue existing conditions and collect an inventory of all the potential trail routes.

### **Initial Desktop Assessment**

BSC will become familiar with previous reports and discussions, and begin completing a desktop assessment about the potential routes. The following data will be compiled by NVCOG and reviewed as part of the initial assessment:

- Plans and reports available from NVCOG including but not limited to:
  - Naugatuck River Greenway Project Priorities (2015), Naugatuck River Greenway Assessment (Phase I- 2004 and Phase II- 2006), and the Regional Naugatuck River

Greenway Routing Study: Town of Thomaston, CT (2010), The Connecticut Bicycle and Pedestrian Transportation Plan (2009).

- Data on file with NVCOG, the Towns of Torrington, Harwinton, Litchfield, Thomaston, and ConnDOT such as roadway mapping, other mapping, tax assessor's data, wetlands maps, Aquifer Protection mapping, etc.
- Aerial photography from NVCOG, the Towns, State, and commercial mapping databases
- Department of Energy and Environmental Protection (DEEP) Natural Diversity Database
- State of Connecticut/ National Register Archeological data
- UConn Map and Geographic Information Center
- USGS Mapping
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Mapping
- Plans, data and reports on file with the USACE including property management plans, trail mapping, and resource location data.

In order to craft an extensive and detailed map with all of the potential routes, NVCOG will provide BSC with all available GIS shapefiles of information available through online resources including property ownership, proximity to amenities and destinations, general topography and geography, protected open space, town boundaries, major roads, infrastructure services, hydrography, and priority natural resources. In addition, publicly available trail data will be acquired from numerous sources such as the CT DEEP, USACE, and the CT Forest and Park Association. Publicly available web based data will be supplemented by trail information obtained from local entities such as land trusts, municipalities, and other trail managers/owners by NVCOG. BSC will compile this information to formulate the base GIS map to be utilized during the routing study.

In addition, BSC may request from NVCOG available traffic data, as-built or reports in order to better understand traffic conditions along the potential public street portions of NRG. Although not currently anticipated, it may be necessary to perform new vehicle and pedestrian counts at specific locations where BSC believes it necessary to understand existing vehicle, bicycle and pedestrian traffic conditions or where data is outdated or non-existent. BSC will obtain all available crash data information along these same streets or at specific at-grade crossings within the project corridor dating back at least three years. Finally, BSC will identify parcels with known or potential historic releases of contaminants that may affect soil conditions and future greenway alignment.

### **Field Inventory**

Following the desktop review and mapping effort, a field inventory will be completed using GPS and a Data Dictionary. The field inventory will identify and catalogue existing conditions along all potential routes including those identified in previous studies, identified by project stakeholders, or identified by BSC. Existing conditions along each of the routes will be inventoried in order to determine the feasibility of constructing a trail. Existing conditions that will be collected along the potential routes include:

- Current land uses
- Accessibility
- Restrictions / constraints (natural and anthropogenic)
- Accessibility factors (slopes, soils, parking lots, etc)
- Existing trail corridors/ spur or off shoot trails
- Potential vernal pools
- Invasive species
- Erosion issues/concerns
- Estimated distance to rails
- Rivers and wetlands
- Rock walls

- Trees of habitat or historic value
- Pinch or choke points
- Scenic vistas
- Stream crossings
- Intersections with roads or other rights of ways, etc.
- If an existing trail is present, further information will be collected including the type of path, conditions, surface material, and width.

BSC will perform a preliminary assessment of the existing Castle Bridge substructure to determine the feasibility for its reuse in supporting a pedestrian structure. The preliminary assessment will consist of a visual examination and photo documentation of the structure by BSC's structural engineer for indications of severe deterioration or scour issues. BSC will No physical testing is anticipated at this time but may be recommended as a follow up to the preliminary assessment.

The existing conditions information collected will be incorporated into the GIS mapping in the form of attribute tables, symbols, images and a story map to further assist with Task 2.

#### SUBTASKS/DELIVERABLES:

- 1.1** Review existing documentation about potential routes. NVCOG to compile information and provide to BSC.
- 1.2** NVCOG will compile existing GIS data (with assistance from NHCOG) and provide to BSC
- 1.3** Conduct preliminary analysis of potential routes
- 1.4** Map and inventory all potential routes

#### Task 2 Analysis of Potential Routes.

Trail systems are integrated networks, more than the sum of the individual trails of which they are composed. Successful trail systems highlight scenic and historic features, protect sensitive resources, create new opportunities for outdoor recreation and inclusion, strengthen the local economy and generate valuable connections between people and places. In reviewing alternatives for primary and secondary trail connections, BSC will compile and review all previous studies prepared for the individual municipalities and NVCOG, consider the Project Committee, municipal, and public input. In addition, BSC will complete an opportunities and constraints analysis, which will evaluate the following factors:

- Access/Connectivity:
  - Opportunities for Connecting Existing Open Space and Publicly Accessible Areas (schools, parks, commuting spots, town centers) such as connecting the NRG corridor to the Roraback Wildlife Management Area in Harwinton and the Pine Cobble section of the Mattatuck State Forest in Litchfield.
  - Opportunities for long distance and looped trails
  - Opportunity for a Diversity of Sustainable Recreational Opportunities
  - Opportunity to connect to existing/future amenities such as parking, benches, picnic areas, interpretative kiosks
- Construction Cost/ Constructability/Maintenance
- Right of Way Concerns
  - Available Land (public vs private)
  - Conflicting Land Uses
- Environmental Constraints
- Potential Permitting Needs / Issues
- Cultural and Natural Resources
- Recreational Opportunities – Fishing / Wildlife viewing / Water sports
- Scenic Value – Vistas, Points of Interest, etc.

- Accessibility - Profile Grade/ ADA Accessibility
- Stakeholder/Landowner Concerns
- Public Concerns - Abutter Privacy and Safety
- Flooding from Thomaston Dam Operations / FEMA and Resiliency Planning
- Safety – Geometry / Traffic Impacts
- Brownfield Issues
- Compatibility and consistency with other Transportation Plans and Studies
  - Municipal Master Plans
  - Open Space Plans
  - Transportation Plans
- Opportunities for Rails with Trail
- Community Support

A trail prioritization matrix similar to that which has been utilized on past NRG studies will be used to summarize the attributes and challenges associated with specific trail alignments and their alternatives. Each of these criteria will be assigned a point value out of a possible 100- point total as a means of evaluating the merits of one route or group of routes over another. In addition, based on this initial assessment, an order-of-magnitude cost of construction will be developed for each segment for comparison purposes. Working together with the Project Committee and the public, BSC will identify appropriate prioritization factors and additional criteria to evaluate existing needs, based on the context and goals of the Project Committee, NVCOG and each municipality. Throughout the public participation process, BSC will engage the community to provide feedback with respect to these factors to facilitate development of a more comprehensive and inclusive trail system that is community-specific and represents the concerns and desires of each Town, NVCOG and the NRG Project Committee.

Although scoring a specific route higher/lower than another will not necessarily secure or eliminate it from consideration, BSC believes this approach will provide a means of comparison and identifying the effort required with respect to engineering, right-of-way, permitting, cost and available funding in order to construct this project.

The results of the evaluation will be summarized in a technical memorandum and provided to the Project Committee for review, comment and discussion. Each municipality will also receive an abridged version of the technical memorandum as it applied to their jurisdictional area. If determined appropriate by NVCOG and the Project Committee, the technical memorandum can also be shared with regulatory agencies, affected property landowners, or the general public.

#### **SUBTASKS/DELIVERABLES:**

**2.1** Develop and implement an objective prioritization matrix to rank potential trail segments

#### **Task 3 Refine Route Preferences, and Define a Firm Preferred Route Agreed Upon by Stakeholders.**

BSC will narrow down the inventory of potential routes, identifying those that are most feasible. Stakeholder involvement will be critical and will be achieved by working closely with a project committee with members from all involved municipalities, USACE, NHCOG, NVCOG and other identified stakeholders. Public input will also be critical and will be solicited through workshops in all of the involved communities, and through surveys, websites, social media or other means deemed appropriate. The ultimate goal is to identify a single agreed upon preferred route.

#### **SUBTASKS/DELIVERABLES:**

**3.1** Develop short list of routing options based on matrix rankings

**3.2** Provide outreach materials to illustrate advantages and disadvantages of shortlist options

## Task 4: Public and Stakeholder Engagement

Stakeholder and public engagement will be crucial to the success of this project in order to ensure that future trail development will have the support of the public and critical stakeholders. Project partners, stakeholders, and the public will be consulted early and often throughout the project.

BSC proposes to meet with the Project Committee to discuss each potential trail section. Individual workshops in each municipality will also be scheduled to solicit public input. In addition to traditional public information meetings, BSC will work with Town and local officials to discuss, outline, and initiate a vibrant and interactive public participation process that can include various outreach efforts such as:

- Facilitating public workshops at key locations along a particular route
- Periodic walkabouts on a weekday/weekend when stakeholders and greenway users are available
- Scheduled committee meetings
- Informational booths at local events (farmer's markets, craft fairs, sports events, etc.)
- Information flyers (paper or electronic)
- Providing graphics/concepts for the general public on NVCOG and Town websites.

As part of previous successful Public Outreach efforts, BSC has also implemented a wide range of methods to solicit and distribute project information directly to the public such as:

- Newsletters
- Municipal websites
- Social media such as Facebook and Twitter
- Electronic survey applications such as Survey Monkey
- Matrix Bar Codes (such as QR Code)
- Simulators/interactive maps such as ArcGIS Story Maps
- BSC has also coordinated simple and low-tech planned site walks where abutters can discuss specific issues about the project and how the design will be compatible with their property.

As a means to have the Project Committee accessible to the public, BSC believes creating a dedicated email address for the Project is an excellent idea that should be explored. This email address could field resident questions in real-time during public presentations, for those not able to attend in person but are watching from home via local cable access.

### SUBTASKS/DELIVERABLES:

- 4.1** Hold stakeholder meetings (including site visits) with municipal officials, USACE officials, COG staff, the New England Railroad Museum, CT DOT and other critical stakeholders. (Assumed to be 6 meetings).
- 4.2** Conduct separate public information meetings / workshops in Thomaston, Harwinton and Litchfield in support of Tasks 1-3. (Assumed to be 4 meetings).
- 4.3** Conduct resident survey online or mail survey to gauge local resident preferences. NVCOG to complete task with BSC oversight.
- 4.4** Develop outreach materials including posters, flyers, handouts, etc. BSC to lead effort with support from NVCOG.
- 4.5** Webpage development and management for duration of study with information and documents for the public and stakeholders (can be hosted by NVCOG). NVCOG to complete task with BSC oversight.
- 4.6** Provide social media support. NVCOG to complete task with BSC oversight.
- 4.7** Prepare press releases. NVCOG to complete task with BSC oversight.
- 4.8** Publish interactive web/story maps. NVCOG to complete task with BSC oversight.

## Task 5: Provide Conceptual Designs, Phasing Recommendations and Cost Estimates.

Once the preferred trail route has been determined, BSC will meet with the Project Committee to develop conceptual context sensitive designs, including phasing recommendations and construction costs. All conceptual designs will focus on the Civil Engineering and Landscape Architectural elements of the project, including the multi-use path, crossings (at-grade), overlook/vista opportunities, environmental and historical points of interest, connections to public buildings and businesses, ADA/AAB compliance, drainage upgrades, path landscaping/enhancements, linear/pocket park possibilities, screening, lighting, interpretive signing, wayfinding and information kiosks, etc. BSC will utilize the previously completed NRG Signage and Wayfinding Guide as reference when preparing signing plans. Where alternatives can be suggested, each alternative will be evaluated with respect to engineering feasibility (pros vs cons) along with a summary of estimated construction costs for comparison and use in future funding applications.

Conceptual design of the defined route will include:

- Trail type, width, materials, etc.
- Construction cost estimates (by phase and municipality)
- Drawings or photo renderings of critical trail elements
- Maps of the defined route
- Recommended amenities and features to include in construction

### SUBTASKS/DELIVERABLES:

**5.1** Conceptual design of trail route including maps of the defined route, trail type, width, materials, typical cross sections, etc.

**5.2** Prepare design and construction cost estimates (by phase and municipality)

**5.3** Prepare drawings or photo renderings of critical trail elements

**5.4** Make recommendations for amenities and features to include in design and construction

**5.5** Prepare estimates of trail maintenance requirements

**5.6** Describe likely ROW impacts and needs

## Task 6: Presentation of Findings.

BSC Group will provide findings through reports and public outreach. This will include a comprehensive report for the entire route and summaries or fact sheets for each municipality detailing trail sections local to each town. Final presentations may be requested by local boards or stakeholder groups.

Based on feedback received from outreach efforts, the NRG Steering Committee, and additional information collected during Tasks 1 through 5, the initial written assessment of the opportunities and constraints analysis (completed in Tasks 2 & 3) will be updated and finalized as the Comprehensive Report for the entire route. Fact sheets pertaining to the individual municipalities will also be created. The complete report and the fact sheets will be accompanied by MXD files and printed maps highlighting the preferred route, conceptual design ideas/drawings and any other information requested by the municipality and the Project Committee (such as an open space and roads layer, DEEP resource maps, etc).

As previously emphasized, stakeholder involvement and public input will be critical throughout the study's development. As described in Task 4, BSC proposes to obtain public feedback through traditional and nontraditional means. In addition, as information is collected in the field and vetted through meetings with the Project Committee, the municipalities, and NVCOG, BSC proposed to disseminate trail information to the public through Story Maps. Ultimately, the final project Story Map will highlight the single agreed upon route.

At the conclusion of the Routing Study, a Crowdsourc Story Map will be developed. Based on our

experience with regional trail mapping projects, Crowdsourced Story Maps are one of the more cost-effective ways to make information developed throughout the project more accessible and interactive for the public. A Crowdsourced Story Map promotes public participation as a collaborative effort by allowing public users to enhance the map with geo-tagged photography. The user-friendly story map will include all appropriate data from the Comprehensive Routing Study as a base, which will display information where clicked by the user. Displayable information will include, but is not limited to: trail name, trail length, trail type, trail surface, allowable uses, trail location (municipality), parking availability, and owner/maintainer contact information. Features will also display hyperlinks to downloadable content. The ArcGIS Online Story Map format will also adjust for mobile users displaying data on smaller screen sizes. An ArcGIS Online Story Map is embeddable on most websites, and quickly sharable on popular forms of social media. All user-uploaded data will be stored in a secure cloud-based system managed by ArcGIS Online.

#### **SUBTASKS/DELIVERABLES:**

- 6.1** Compose a detailed Report of Findings. Findings will be presented as a whole and broken out by municipality.
- 6.2** Create a summary/fact sheet for each Municipality
- 6.3** Presentations to local boards or stakeholder groups (Assume 4 meetings)
- 6.4** Provide NVCOG with GIS files and maps of final agreed upon route

#### **Task 7: Project Coordination**

BSC will be expected to be in regular contact with NVCOG and project partners regarding progress. Progress reports will be submitted with each invoice, and regular conference calls will keep project partners apprised of project status.

#### **SUBTASKS/DELIVERABLES:**

- 7.1** Coordinate a project kickoff meeting to discuss project expectations with partners
- 7.2** Participate in bi-weekly progress conference calls with NVCOG, NHCOC and municipal staff to discuss status of work and any issues and problems. It is anticipated that the conference calls would last in the range of 30-to-60 minutes.
- 7.3** Attend municipal board and commission meetings as may be necessary. (Assumed to be 4 meetings).